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**Apparatus to secure the mouth of a bag open for sliding debris into the
bag**

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BACKGROUND

Field of Invention:

The invention relates to bags, specifically a device to hold a bag open to facilitate sliding debris into the bag.

10 Related Art:

It is necessary when filling a flimsy bag to have a means of keeping the mouth of the bag open while it is being filled. One method is to use a trashcan or similar apparatus, which holds the bag vertically such that the opening is horizontal and elevated above the ground. The problem with this method is it requires lifting the debris up to the opening of the bag, which is inefficient and fatiguing to the human body especially when the debris is made up of a large amount of tiny loose pieces, such as leaves, that require repeatedly lifting handfuls or scoops of the debris. A more efficient method is to slide large amounts of the debris directly into the bag. One way of doing this is to have one or more people hold the bag open while another slides the debris into the bag. But, this is also inefficient since it requires more than one person, who may not be available, and it can be awkward for a person using only his/her limbs to keep the opening in the optimal shape and position for filling. So far, apparatuses designed to enable sliding debris into a bag have been impractical to actually use. Their designs are overly complex and lack the

optimal combination of features, thus making them too expensive and inconvenient to be worthwhile.

U.S. Pat. No. 3,998,415 describes an apparatus that does not adequately hold the opening of the bag flush to the ground. The bag would slide out of the slots on the base member as the debris is being forced into the bag. Furthermore, it consists of a multitude of parts that must be assembled and adjusted prior to actually putting it to use. Even after the apparatus is assembled, a multitude of clips must be applied and removed each time the bag is changed, which is vary time consuming. It would be easier and cheaper to use a trashcan.

U.S. Pat. No. 5,149,028 also does not adequately hold the opening of the bag flush to the ground. The open edge of the bag that is supposed to be flat against the ground is not clamped to the apparatus and, therefore, debris would catch on and slide under the bag opening as it is swept into the bag.

The apparatuses of U.S. Pat. No. 4,318,521 and U.S. Pat. No. 5,106,041 do not adequately secure the bag to frame. The only method of securing the bag to the frame is that it is "stretched" around the frame. This requires it to be made to a specific size for a specific size bag in order for the bag to fit tightly over the frame. This severely limits the range of bag sizes it can be used with. Even if the bag is stretched tightly over the frame, it will still slip off as debris is being forced into it. They also consist of a system of tubes that must be fitted together, which adds to the manufacturing expense and inconvenience to the user.

U.S. Pat. No. 4,787,753 also describes an apparatus that does not adequately secure bag to frame. It relies on the frictional force of the inner and outer loops against

each other. These would easily slide apart as debris is forced into the bag, especially as the parts become worn and deformed from use, which is evident by the statement that they freely pass through each other.

5 SUMMARY

The invention presented in this patent is an apparatus to hold a mouth of a bag open such that part of the opening of the bag is straight so a wide portion of the opening can be held flush with a flat surface to facilitate sliding piles of debris into the bag. The apparatus comprises a pair of members that fit and join together with a portion of the bag proximate the bag's mouth secured between them. One of the members is a support member, which is typically a loop of material with at least one straight segment that supports the shape of the bag mouth. The other member is a retaining member that secures substantially the entire periphery of the bag mouth to the support member.

15 DRAWINGS

Figures 1 shows a preferred embodiment of the apparatus with the support loop and retaining loop joined together with the support loop inserted inside the longitudinal slot of the retaining loop.

Figure 2 is an isometric view of the preferred embodiment with the support loop and retaining loop separated from each other.

Figure 3 is a cross sectional view of the support loop and retaining loop joined together taken along line 3-3 of Figure 1.

Figure 4 shows the preferred embodiment being applied to a bag.

Figure 5 shows the preferred embodiment holding the mouth of a bag open and ready to be filled.

Figures 6 through 13 show cross sections of various alternative embodiments of the apparatus.

5 Figure 14 through 18 show additional features of the apparatus that can be incorporated into specific embodiments to assist in holding the apparatus steady.

REFERENCE NUMERALS

	1-entire apparatus
10	2-support loop
	2a to 2h-alternative embodiments of support loop
	3-retaining loop
	3a to 3h-alternative embodiments of retaining loop
	4-longitudinal slot
15	4a to 4h-alternative embodiments of longitudinal slot
	5-bag
	6-hook(latch)
	7-ridge
	8-groove
20	9, 11 and 12-convex sides of support loop
	10, 13 and 14-convex sides of retaining loop
	15, 17, 18 and 2-concave sides of support loop
	16, 19 and 20-concave sides of retaining loop

22-handle

23-spikes

24-legs

25-feet

5 26-footplate

DESCRIPTION OF INVENTION

Figure 1 shows a first preferred embodiment of the invention 1 as two D-shaped
10 loops, one being a support loop 2 and the other being a retaining loop 3. The support loop
2 is single piece typically molded from a rigid and durable material such as but not
limited to steel, aluminum, or plastic. Retaining loop 3 is also typically a single piece
molded of a durable, and resilient material, such as but nor limited to rubber or plastic.
The retaining loop 3 may be comprised of a flexible elastomeric material such as rubber
15 and certain plastics such that the retaining member is not self supporting when in looped
form. Alternatively, the retaining loop 3 can be comprised of a rigid material similar to
the material comprising the support loop 2 but having features that permit the material to
elastically and resiliently deform when joined with the support loop 2. The retaining loop
3 has a longitudinal slot 4 that extends along the circumference of the retaining loop 3 for
20 receiving support loop 2.

The various components of the apparatus are typically molded, such as injection
or vacuum molded when the apparatus is comprised of a plastic material. However, other

suitable manufacturing methods can be utilized to fabricate the loops as would be obvious to one of ordinary skill in the art.

Figure 2 is a isometric view of support loop 2 and retaining loop 3 separated from each other. Figure 3 is a cross sectional view of support loop 2 and retaining loop 3 mated together. As shown in figure 3, support loop 2 has a generally rectangular cross section and retaining loop 3 has a generally U-shaped (or C-shaped) cross section. The relative dimensions of support loop 2 and retaining loop 3 are such that support loop 2 fits tightly within longitudinal slot 4 with a single layer of the bag proximate its mouth 5 secured between the loops while also allowing manual joining and separation of the two loops. In this preferred embodiment, the support loop 2 protrudes a sufficient distance beyond the opening of longitudinal slot 4 to be manually grasped by the user to facilitate separating the two loops, although a substantial portion of both the top and bottom sides of the support loop are covered by the slot 4.

Figures 6 through 13 are cross sectional views showing various alternative embodiments for mating the two loops to prevent unintentional separation. Figure 6 is similar to figure 3 except that retaining loop 3a substantially encloses support loop 2a and has an additional hook (or latch) 6 that braces against a front side of the support loop 2a to assist in securing the retaining loop and the sandwiched bag in place.

Figure 7 is also similar to figure 3 with the exception that the support loop 2b has a ridge 7 and the retaining loop 3b has a groove 8 to receive ridge 7. Accordingly, the corresponding ridge and groove act to snapidly join the two loops together to assist in securing the retaining loop and the sandwiched bag in place.

Figure 8 shows the support loop 2c having a convex side 9 and the longitudinal slot 4c in the retaining loop 3c having a curved concave side 10 to fit the convex side of support loop 2c. Accordingly, the retaining loop snaps in place over the support member to firmly secure it in place. Figure 9 shows an alternative embodiment very similar to that of figure 8 except the support loop 2d has two convex sides 11 and 12 and the longitudinal slot 4d in the retaining loop 3d has two curved concave sides 13 and 14 to fit the convex sides of the support loop.

Figure 10 shows the support loop 2e having a concave side 15 and the longitudinal slot 4e in the retaining loop 3e having a curved convex side 16 to fit the concave side 15 of support loop 2e. In a manner similar to that of the embodiment of figure 8, the retaining loop snaps in place over the support member to firmly secure it in place. Figure 11 shows the support loop 2f having two concave sides 17 and 18 and the longitudinal slot 4f in the retaining loop 3f having two curved sides 19 and 20 to fit the concave sides of support loop 2f.

Figure 12 shows support loop 2g and retaining loop 3g with circular cross sections. Accordingly, the retaining loop snaps over the circular support loop to secure it and the bag in place.

Another embodiment of the present invention is shown in figure 13 where the retaining loop 3h is a band of flexible and resilient material that stretches to fit around the outside the support loop 2h and biases the portion of the bag sandwiched therebetween against the concave surface 21 in support loop 2h.

Figures 14-18 show various components that can be included with various embodiments to help support or hold the apparatus in an upright and generally vertical

position to facilitate the apparatus's use. Figure 14 shows the device with an optional handle 22 attached to support loop 2 for manually maneuvering and holding the device. The handle can be stationary, retractable or detachable. Further, the handle may be pivotally connected to the apparatus, fixed thereto or integrally molded therewith.

5 Figures 15 through 18 show additional components or features for making embodiments of the apparatus free standing. Figure 15 shows the device with optional spikes 23 that protrude from the bottom of support loop 2 so as to be inserted into the ground. Figure 16 shows the device with optional legs 24 attached to support loop 2. Figure 17 shows the device with optional feet 25 attached to support loop 2. Figure 18
10 shows the device with optional footplate 26 attached to support loop 2 on which the user places his or her foot to hold the apparatus up right. The methods for making embodiments of the apparatus free standing described above may be stationary, retractable or detachable. Further, as applicable, they can be pivotally or fixedly attached to the apparatus or they can be integrally molded therewith.

15 The operation of the apparatus is simple. Referring to figure 4, the mouth 5 of the bag 27 is fed through support loop 2 and then the perimeter of the mouth 5 is folded back around support loop 2. With support loop 2 lying horizontal on a flat surface 28, retaining loop 3 is aligned parallel to support loop 2 with longitudinal slot 4 opening toward support loop 2 and pressed against support loop 2. By pressing the retaining loop 3
20 against support loop 2 the longitudinal slot 4 engulfs at least a portion of the support loop 2 with the perimeter of the bag proximate its mouth 5 trapped between them. Referring to figure 5, the apparatus 1 is then held perpendicular to the surface 28 near where a pile of debris 29 is located with the straight side 30 against the surface 28 and the debris 29 is

slid into the bag in a sweeping motion. The bag is released by manually pulling retaining loop 3 and support loop 2 away from each other.

Conclusion, Ramifications, and Scope

Accordingly, one will see that preferred and alternative embodiments of the apparatus provide for an easy and efficient method to fill bags with debris consisting of many tiny loose pieces, such as leaves, grass clippings, grain or even gravel. With the present invention a person can hold a bag open with one hand and sweep the debris in with the other hand. It has the advantage of securing the entire perimeter of the bag opening to the support loop, which prevents snagging or bunching of the opening as debris is being slid into the bag. The bag opening dependably remains in the open position until the user intentionally releases it. The loops each comprise one piece and are easily manually press fitted together and separated making the present invention inexpensive and as quick and easy to set up as lining a trashcan.

The D-shape is preferred because it maximizes the contact of the flat side of the bag opening with the ground for receiving wide piles of debris while also providing sufficient height of the opening. However, the D-shape is not a requirement. Any shape that has at least one straight portion that can be placed flatly against the ground is contemplated. It is not a requirement that the apparatus be made to specific dimensions for specific bag sizes. Instead, it is an advantage that one particular size of the apparatus can work with a wide range of bag sizes since a bag with a larger perimeter length than the apparatus can be folded over proximate its mouth. It may be manufactured in several sizes, such as a large size to accommodate a range of extremely large bags for receiving extremely large amounts of debris, a medium size to accommodate the range of more

commonly used house-hold lawn and trash bags, and a smaller size for the range of much smaller bags. Similarly, the dimensions may vary to accommodate thicker bags, such as canvas bags, and thinner bags, such as kitchen trash bags.

Is some cases it may be preferable that the retaining loop be a sturdy rigid
5 material such as aluminum, steel or a reinforced plastic instead of a more flexible material. Although it is preferred that the loops be manufactured by molding the material, it may alternatively be manufactured by elongated lengths of material that are bent to form the loop or any other suitable manufacturing techniques. Also, the retaining loop may remain an elongated length of flexible and resilient material that the user bends
10 to match the shape of the support loop when applied to the support loop. Furthermore, the retaining loop may be two pieces, one being straight and the other being curved, which are applied to the straight and curved segments of the support loop respectively.

The preceding descriptions of the present invention only serve as examples of its preferred embodiment and certain alternative embodiments. The actual scope and limits
15 of this patent should be determined by the appended claims and their legal equivalents rather than the examples given.